Commissioning Handbook

AutroSafe Interactive Fire Detection System

AUTRONICA

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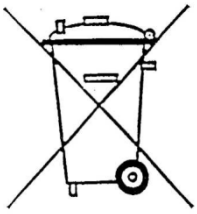


Table of Contents

1. Introduction 5
   - 1.1 About the Handbook 5
   - 1.2 The Reader 5
   - 1.3 Reference Documentation 6

2. Quick Reference Guide 7
   - 2.1 Initial Commissioning 7
   - 2.2 Upgrading System Software and Configuration 7

3. Verifying the Loops 8
   - 3.1 AS-2000 Loop Diagnostic Tool 8
   - 3.2 Verification Procedure 8

4. Consistency Check of Configuration Data 9
   - 4.1 Introduction 9
   - 4.2 Parameters Used for the Consistency Check 9
   - 4.3 Importing Loop Data from the AS-2000 Tool 10
   - 4.4 Consistency Check Using the AS-2000 / Config Mismatch Tool 10
   - 4.5 Generating Configuration Files 10

5. Power Commissioning 11
   - 5.1 Addressing Power Boards on the AutroFieldBus 11
     - Switch Settings on Power Board BSF-400 11
     - 5.1.1 11
     - 5.1.2 Location of Switches 11
     - 5.1.3 AutroFieldBus Addresses 13
     - 5.1.4 Power Board Configuration Switches 14
   - 5.2 Calibration Procedure - Power Unit BPS-410 15

6. Addressing Panels 16
   - 6.1 Definitions 16
     - 6.1.1 System ID 16
     - 6.1.2 Panel ID 16
   - 6.2 Location of Switches 17
   - 6.3 Assigning System IDs 18
   - 6.4 Assigning Panel IDs 19

7. Verifying the System Before Startup 21

8. Startup Procedure 22
   - 8.1 Applying Power to the System 22
   - 8.2 IP Number Structure 23
   - 8.3 Assigning IP Adresses 23
     - 8.3.1 Automatic Addressing Mode 24
     - 8.3.2 Manual Addressing Mode 26

8.3.3 Configuration Missing 27
8.4 Configuration File 28
8.4.1 Name, Format and Extension 28
8.4.2 Copying the Zip File to a USB Stick 28
8.5 Uploading Configuration Files to the System 29
8.6 Configuration Mismatch 32
8.7 Entering Required Access Levels 33

9. Verifying the System after an Upload 35
9.1 General System Verification Procedure 35
9.2 Verifying Detection Loops During Normal Operation 36

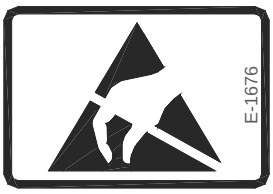
10. Upgrading the System 37
10.1 Introduction 37
10.2 Upgrading During Normal Operation (SW/Config) 37
10.2.1 Introduction 37
10.2.2 Upgrading Software During Normal Operation 38
10.2.3 Upgrading Configuration During Normal Operation 38
10.3 Upgrading when Panels are Added/Removed 39
10.4 Upgrading if IP Addresses are to be Changed 39
10.5 Upgrading a Single Panel 39
10.6 Upgrading by Remote Access to a Web site 40
10.7 Upgrading Software Version 4.0.1 to 4.1.1 41
10.7.1 General 41
10.7.2 Preparing a System in Normal Operation 41
10.7.3 Preparing a System in System Fault Condition 42
10.8 Upgrading Software Version 4.0.1 or 4.1.1 to 4.3.1 43
10.8.1 Example 1: Upgrading all Panels from SW Version 4.0.1 or 4.1.1 to 4.3.1 43
10.8.2 Example 2: Adding a BS-420/BS-430 panel with SW Version 4.1.1 to a System Running on SW Version 4.3.1 43
10.8.3 Example 3: Adding a BC-420 Controller with SW Version 4.1.1 to a System Running on SW Version 4.3.1 43
10.8.4 Example 4: Adding a Panel with SW Version 4.3.1 to a System Running on SW Version 4.1.1 44

11. Startup Procedure for a Dual Safety System 45
11.1 Introduction 45
11.2 Guidelines – Startup Procedure 46

12. Fault Messages during Uploading 48
12.1 Introduction 48
12.2 Invalid File on USB Stick 48
12.3 Data Transmission Timeout 48
12.4 Corrupt File 48
12.5 Fail to Unpack Files 49

13. Reader's Comments 51

1. Introduction



This product contains static-sensitive devices.
Always use an antistatic wrist strap / ground bracelet to avoid any electrostatic discharge.

1.1 About the Handbook

This handbook is intended to provide all necessary information for the commissioning of the AutroSafe Interactive Fire Detection System, Release 4.

The handbook covers the commissioning of a *standalone* system (Fire Alarm Control Panel), as well as the commissioning of a *distributed* system with several system units, operating on Autronica's local area network; AutroNet, including:

- Power Boards in Power Cabinet BP-405 and
  Power Unit BPS-405/BPS-410 (AutroFieldBus addressing)
- Fire Alarm Control Panel BS-420
- Controller BC-420
- Operating Panel BS-430
- Repeater Panel BU-BV-420

1.2 The Reader

The handbook is intended to be used by Autronica Fire and Security trained service and technical personnel who are responsible for the installation of the AutroSafe Interactive Fire Detection System, Release 4.

1.3 Reference Documentation

The table below shows an overview of the technical marketing documentation for AutroSafe Interactive Fire Detection System, Release 4.

Document Name	Part number	File name
System Description	116-P-ASAFE-SYSTEMD/EGB	asafesystem_egb
Installation Handbook	116-P-ASAFE-INSTALL/DGB	asafeinstall_dgb
Commissioning Handbook	116-P-ASAFE-COMMISS/EGB	asafecommiss_egb
User Guide, Remote Access	116-P-ASAFE-REMOTEAC/EGB	asaferemoteac_egb
Connecting Loop Units	116-P-CONNECTLOOPUNIT/DGB	connectloopunit_dgb
Operator's Handbook	116-P-ASAFE-OPERATE/FGB	asafeoperate_fgb
User Guide	116-P-ASAFE-USERGUI/LGB	asafeusergui_lgb
Wall Chart	116-P-ASAFE-WALLCHA/LGB	asafewallcha_lgb
Menu Structure	116-P-ASAFE-MENUSTR/MGB	asafemenustr_mgb
Datasheet; Fire Alarm Control Panel BS-420	116-P-BS420/CGB	bs420_cgb
Datasheet; Operator Panel BS-430	116-P-BS430/CGB	bs430_cgb
Datasheet; Repeater Panel BU-BV-420	116-P-BUBV420/CGB	bubv420_cgb
Datasheet; Controller BC-420	116-P-BC420/CGB	bc420_cgb
Datasheet; Controller Unit Rack BC-440	116-P-BC440/CGB	bc440_cgb
Datasheet; Power Cabinet BP-405	116-P-BP405/CGB	bp405_cgb
Datasheet; Power Unit BPS-405	116-P-BPS405/CGB	bps405_cgb
Datasheet; Power Unit BPS-410	116-P-BPS410/CGB	bps410_cgb
Datasheet; AutroKeeper BN-180	116-P-BN180/CGB	bn180_cgb

2. Quick Reference Guide

This quick reference guide outlines all the necessary steps to successfully commission the AutroSafe Interactive Fire Detection System the very first time, assuming that the system software is already uploaded to the system, and no configuration files have been uploaded.

Configuration upgrade and system software upgrade are described in a separate chapter (Chapter 10).

2.1 Initial Commissioning

Step	Action	Chapter
1	**Verify the detection loops** by means of the AS-2000 tool.	Chapter 3
2	**Perform a consistency check of the configuration data** using the results from the AS-2000 verification and the data that has been configured by means of the AutroSafe Configuration Tool.	Chapter 4
3	**Assign an AutroFieldBus address** to each Power Board BSF-400 (rotary switches) / AutroFieldBus unit.	Chapter 5
4	**Assign a System ID** to each panel by means of rotary switches (on BSA-400).	Chapter 6.3
5	**Assign a Panel ID** to each panel by means of switches (dip-switches and rotary switches on BSA-400).	Chapter 6.3
6	**Verify the system before startup**	Chapter 7
7	**Apply power to the system**	Chapter 8.1
8	**Assign an IP Address** to each panel	Chapter 8.3
9	**Upload configuration data** to all panels from one central point (a panel).	Chapter 8.5
10	**Verify the system after an upload**	Chapter 9

2.2 Upgrading System Software and Configuration

For information regarding configuration upgrade and system software upgrade, refer to Chapter 10.

3. Verifying the Loops

3.1 AS-2000 Loop Diagnostic Tool

All loops should be verified with the *AS-2000 Loop Diagnostic Tool* before startup. Although this is presumably already done at an earlier stage (shortly after the installation), it is recommended that all loops are verified once again in case minor changes have been done. By doing this, you will eliminate possible problems which could occur during the startup procedure and upgrading of configuration data.

The AS-2000 allows you to find all points connected to the selected loop driver, and present them graphically.

You will find detailed information on the installation and use of AS-2000 in the *User Guide, AS-2000 Loop Diagnostic Tool.*

AS-2000 can be connected directly to an AutroSafe operating panel, or directly to a detection loop by means of an external interface unit, WAS-2000.

3.2 Verification Procedure

Pressing the START button in the Topology window (AS-2000) tells AS-2000 to find all points connected to the selected loop driver, and present them graphically in a correct electrical sequence. Points will be presented with unique symbols for each type of *Loop Unit*, and with important information such as *Production Number (PN),* and the *Loop Sequence Index (LSI)*. In case of illegal topologies, like multiple branch-offs and loop breaks, these will be presented with self-explaining symbols.

Use the AS-2000 to;

register all loop units on each loop, including:

- the *Loop Unit type*
  (detector type, manual call point, electronic sounder, I/O unit)
- *Loop Sequence Indexes* ***LSI***
  (order/location)

- register all branch offs and loop break positions
- locate any breaks on the loop wire (both positive and negative wires)
- measure the loops' total resistance, current consumption and voltage drop
- earth fault

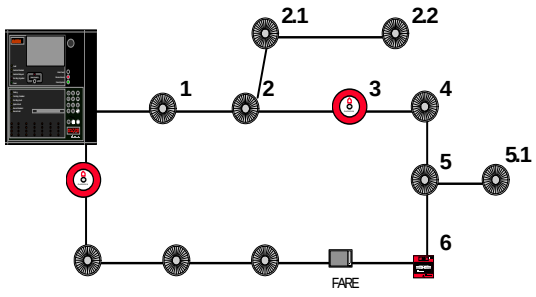
4. Consistency Check of Configuration Data

4.1 Introduction

NOTE:
To ensure a problem-free upload of configuration data, always perform a consistency check, using the results from the AS-2000 verification and the data that has been configured by means of the AutroSafe Configuration Tool.

4.2 Parameters Used for the Consistency Check

The table below provides a description of two of the parameters that are used for the consistency check. These parameters are shown in the Topology View in AS-2000, as well as in the topology view in the AutroSafe Configuration Tool.

Parameter	Abbreviation	Description	Illustration
Loop Unit		The loop unit can be a detector, a manual call point, a loop sounder or an I/O unit.	*(Examples)* Heat detector (BD-200/300/500) Optical smoke detector (BH-200/300/500) MultiSensor detector (BH-220/320/520) Manual callpoint (BF-200/300/500) Electronic addressable sounder (BBR-200) Input / Output unit (BN-300, BN-310, BN-320 etc.)
Loop Sequence Index	**LSI**	A *loop specific* index telling the exact Loop Unit *order* on the loop (sequencially numbered). A branch-off is described by a decimal followed by a sequencial index.	*(Example)* 

4.3 Importing Loop Data from the AS-2000 Tool

The *AutroSafe Configuration Tool* features an Import command allowing you to import loop data directly from the AS-2000 Loop Diagnostic tool. In this way, it is possible to ensure that the point types and sequence indexes in the configuration will be identical to the real loop. Tag Names and optional Detection Zones (DZs) will be assigned to the points during import.

For further information, refer to the Help System for AutroSafe Configuration Tool and the User Guide for the AS-2000 Loop Diagnostic Tool.

4.4 Consistency Check Using the AS-2000 / Config Mismatch Tool

The AutroSafe Configuration Tool allows you to do a consistency check of configuration data by means of a menu called AS-2000 / Config Mismatch Tool (in the Tool menu).

This feature allows you to easily compare the actual configuration data downloaded from a detection loop and imported to the AutroSafe Configuration Tool (using the AS-2000) with the configuration data you have entered in the AutroSafe Configuration Tool.

4.5 Generating Configuration Files

System configuration is done from a computer by the means of the *AutroSafe Configuration Tool*. This tool allows you to generate configuration files, which then can be uploaded to target after the system has been verified.

5. Power Commissioning

5.1 Addressing Power Boards on the AutroFieldBus

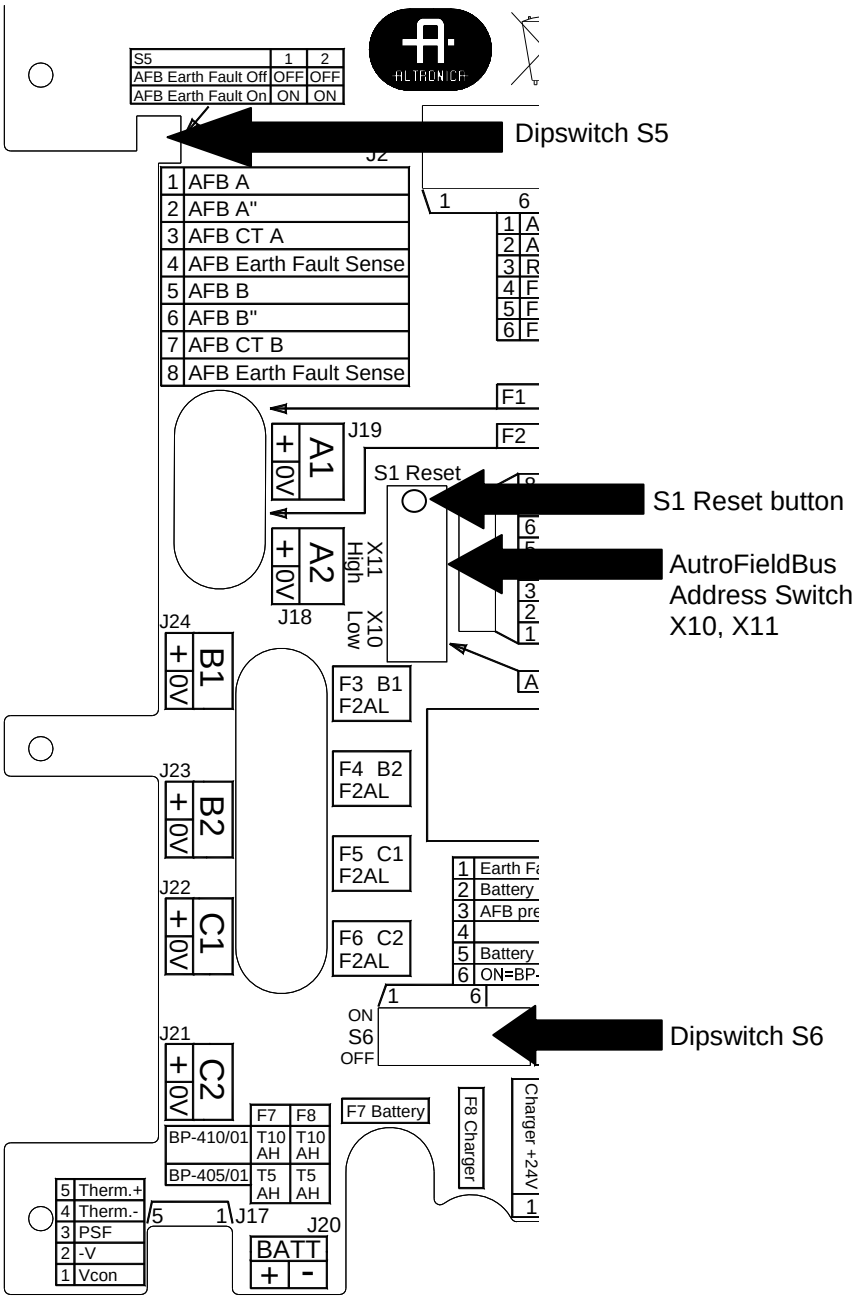
5.1.1 Switch Settings on Power Board BSF-400

The board is configured by means of two switches:

- Rotary switches X10 and X11 - AutroFieldBus address switch. Each Power Board is given a unique address.
- Dipswitch S5/S6 – configuration (refer to dipswitch table, chapter 5.1.4)

5.1.2 Location of Switches

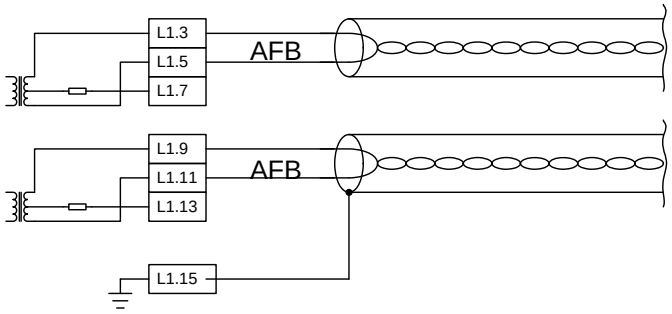
The location of the dipswitch S5 and S6, plus the rotary switches X10 and X11 are shown on the drawing.


S5
1
2
AFB Earth Fault Off
OFF
OFF
AFB Earth Fault On
ON
ON
Dipswitch S5
J2
1 AFB A
2 AFB A"
3 AFB CT A
4 AFB Earth Fault Sense
5 AFB B
6 AFB B"
7 AFB CT B
8 AFB Earth Fault Sense
F1
F2
J19
A1
+
0V
S1 Reset
S1 Reset button
A2
X11
High
X10
Low
J18
AutroFieldBus
Address Switch
X10, X11
J24
B1
F3 B1
F2AL
J23
B2
F4 B2
F2AL
J22
C1
F5 C1
F2AL
F6 C2
F2AL
J21
C2
ON
S6
OFF
Dipswitch S6
F7
F8
BP-410/01
T10 AH
T10 AH
BP-405/01
T5 AH
T5 AH
F7 Battery
F8 Charger
Charger +24V
5 Therm.+
4 Therm.-
3 PSF
2 -V
1 Vcon
J17
J20
BATT
+
-

5.1.3 AutroFieldBus Addresses

Each AutroFieldBus unit/Power Board BSF-400 on an AutroFieldBus must be assigned a unique address by means of an rotary switch (see previous page).
The drawing below shows the AutroFieldBus connections on the main terminal block, list L1 mounted on a DIN rail inside the cabinet (BS-420/BC-420). The **first** AutroFieldBus unit is connected to the terminals L1.9 / L1.11 (AFB A). The last unit is connected to L1.3 / L1.5 (AFB B).

Main terminal block, list L1 inside

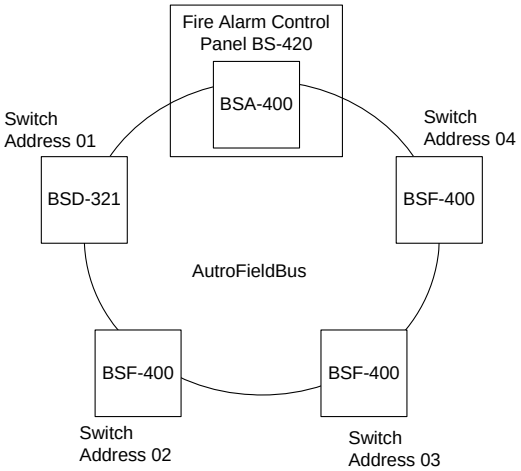


⇨ The **first** AutroFieldBus unit

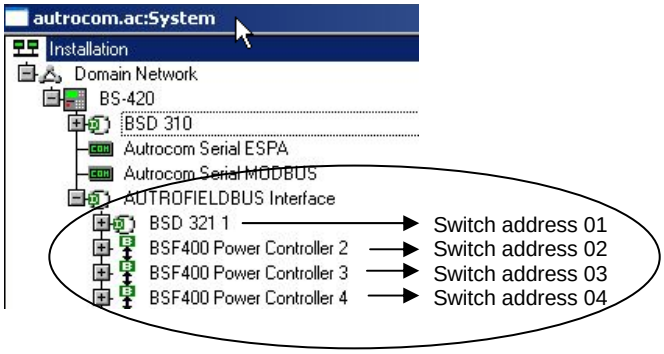
A maximum of 31 AutroFieldBus units can be connected to one AutroFieldBus, giving the number range 01 to 31.
The illustration below shows an example of the system topology window. 4 AutroFieldBus units are added to the AutroFieldBus interface.

The sequence of the units in the topology window determines the switch settings on each unit, i.e. the first unit (the uppermost unit in the topology window) is to be given switch address 01, the next is to be given switch address 02, and so on.
Note that the physical sequence of AutroFieldBus units on the AutroFieldBus must not necessarily correspond to the sequence shown in the topology window, however this is recommended.

Addressing AutroFieldBus units on the AutroFieldBus



Example: System topology window in the AutroSafe Configuration Tool



5.1.4 Power Board Configuration Switches

The settings of the dipswitches are read during startup. If the switches are changed for any reason, the changes will not take affect until the Power Board is restarted (pressing the reset button S1 on the Power Board).

Dipswitch table – S5

S5.1	S5.2	Function
OFF	OFF	AutroFieldBus earth fault OFF
ON	ON	AutroFieldBus earth fault ON

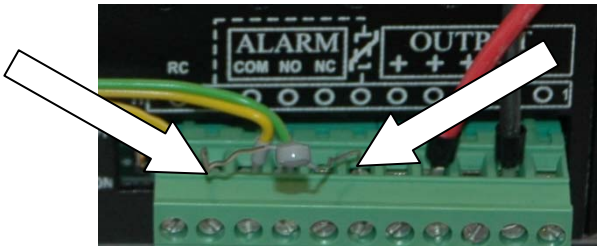
Dipswitch table – S6

Switch	Name	Comment
S6-1	Earth Fault	ON: Earth fault monitoring activated OFF: Earth fault monitoring deactivated
S6-2	NA	Must always be set to OFF (default).
S6-3	AutroFieldBus	ON: AuttroFieldBus connected OFF: AutroFieldBus not connected
S6-4	NA	-
S6-5	Battery	ON: Battery connected OFF: Battery not connected
S6-6	Power Unit Type	ON: BPS-405 OFF: BPS-410

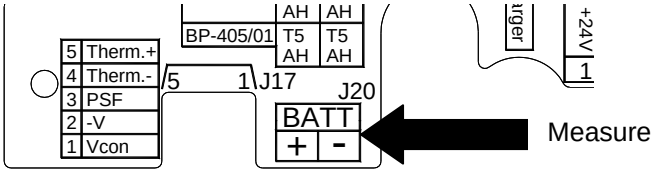
5.2 Calibration Procedure - Power Unit BPS-410

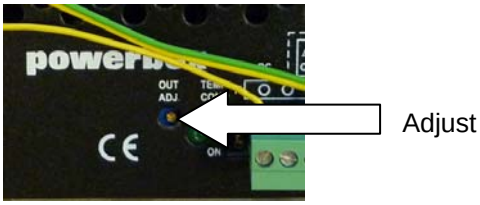
When using Power Unit BPS-410 (including a 24V/10A power supply), a calibration procedure must be performed. This is necessary in order to obtain a correct temperature compensated charging voltage to the batteries. The procedure is as follows:

- Before applying power to the system, the power supply's temperature sensor (thermistor delivered with the power unit) must be temporarily replaced with a fixed 2,2kΩ resistor (terminal point 2 and 6 from the left, marked with a stippled line from terminal point 2 to the thermistor symbol at point 6).

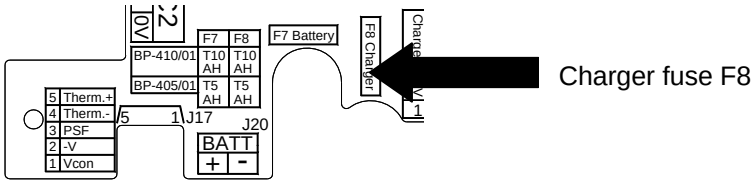


- Apply power to the system by connecting the mains cable to the mains socket or by switching the power ON from an external main fuse box.
- Measure the voltage on the BSF-400's battery terminals (BATT +/-) while adjusting the voltage with a small screw driver to 27,4V on the power supply (OUT ADJ).





- Disconnect mains power from the power supply and remove charger fuse F8.



- Remove the resistor and reinsert the thermistor.
- Insert the charger fuse F8 and re-connect mains power to the power supply.

6. Addressing Panels

6.1 Definitions

6.1.1 System ID

A panel's System ID indicates which system and unique configuration a panel belongs to. All panels communicating on the same AutroNet network must have the same System ID, usually set to 01 (switch setting; rotary switches X5 and X3).

The System ID also determines the specific number series of the IP Addresses (which are set during commissioning by operating the AutroSafe menu).

Note that the term "Network ID" is used on the circuit board's label instead of the correct term System ID. In earlier AutroSafe 3 versions, Panel ID was used instead of System ID.

6.1.2 Panel ID

Each panel in the system must be assigned a unique Panel ID which must correspond to the Panel ID given in the specific configuration in the Configuration Tool (switch setting; rotary switches X6 and X4, plus the settings of dip-switch S2).

The Configuration Tool generates a catalogue structure with the following number series of Panel IDs for the different panel types:

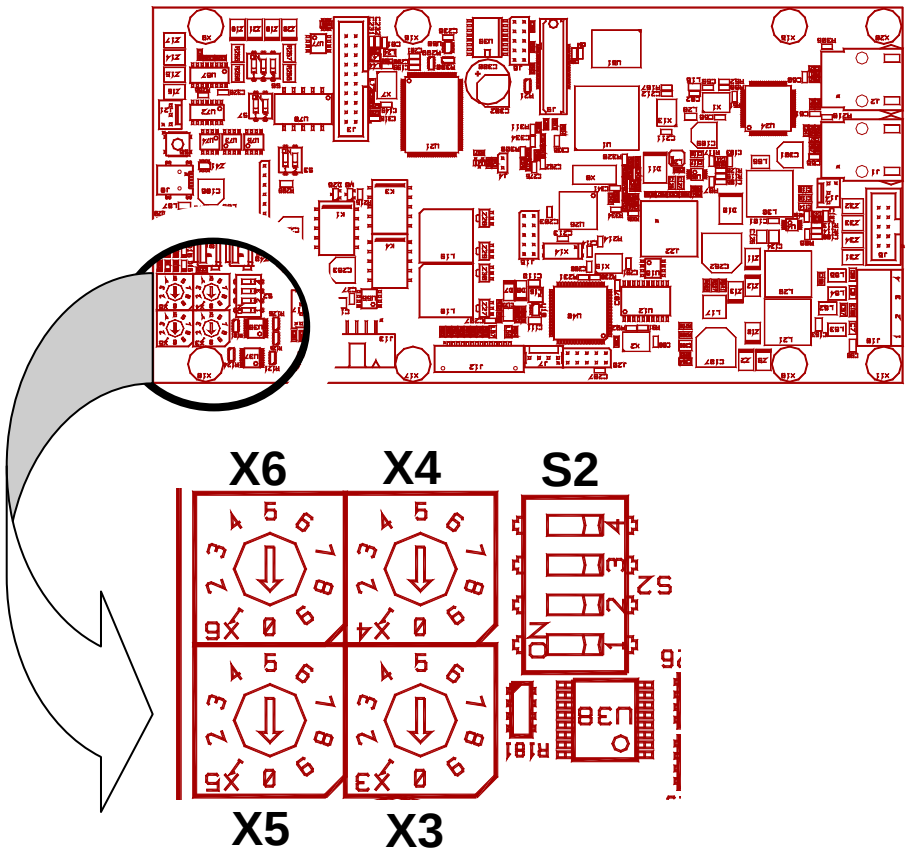
Panel	Panel IDs Number Series	Panel IDs Hexadecimal values
BS-420	1-31	01-1F
BC-420	33-63	21–3F
BS-430	65-95	41-5F
BU-420	97-159	61-9F
BV-420	161-223	A1-DF

Note that term System ID is used in the configuration tool and on the circuit board's label instead of the correct term Panel ID.

6.2 Location of Switches

The switches are located on the lower left hand side of the BSA-400 circuit board, easily accessible through the hole in the metal cover.

The BSA-400 circuit board



6.3 Assigning System IDs

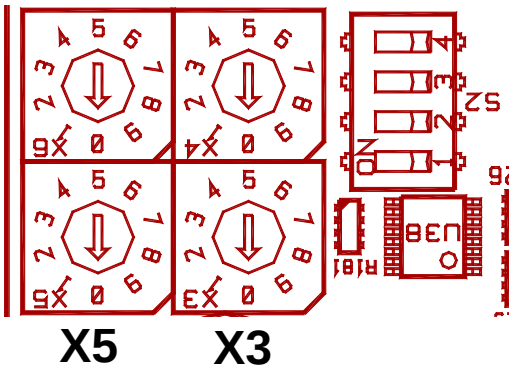
The settings of the rotary switches X5 and X3 determine the panel's System ID, i.e. which system and unique configuration the panel belongs to.

All panels communicating on the same AutroNet network must have the same System ID, usually set to 01.

X5 is set to 0
X3 is set to 1

If there is a second network, this network can be set to 02, a third can be set to 03, etc.

Switch X5 corresponds to the most significant digit in the address.



6.4 Assigning Panel IDs

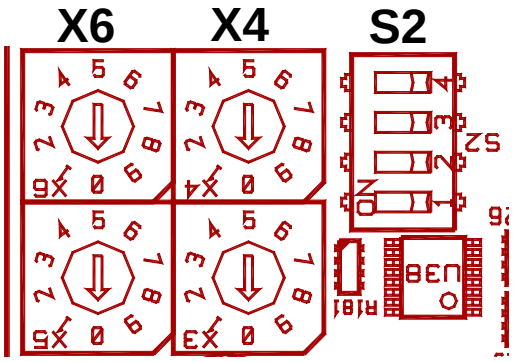
The settings of the rotary switches X6 and X4, plus the settings of dip-switch S2 (type of panel) determine the Panel ID.

Each panel in the system must be assigned a unique Panel ID (switch settings) which must correspond to the Panel ID given in the specific configuration in the Configuration Tool.

Note that a standalone Fire Alarm Control Panel BS-420 always has Panel ID=00.

Switch X6 corresponds to the most significant digit in the address.

Note that the correct switch settings for the *panel type* in question is preset at the factory (dipswitch S2) - except for the BU-BV-420 panel, as this panel can be defined both as a Information Panel and Fire Brigade Panel.



The following table deals with the Panel IDs when several panels communicate on the AutroNet (local area network).

Panel	Panel ID	Panel ID Hex. values	Rotary switch X6	Rotary switch X4	Panel Type Dip-switch S2 0=OFF, 1=ON Switch 1 2 3 4
BS-420	1-31	01-1F	0-3	0-9	0 0 0 0
BC-420	33-63	21–3F	0-3	0-9	1 0 0 0
BS-430	65-95	41-5F	0-3	0-9	0 1 0 0
BU-420	97-159	61-9F	0-6	0-9	1 1 0 0
BV-420	161-223	A1-DF	0-6	0-9	1 0 1 0

Example:
A network configuration consists of two BS-420 panels, one BS-430 panel and one BU-BV-420 panel (a BU-BV-420 panel defined as a Fire Brigade Panel).

In this example, the following addressing applies:

Panel	Panel ID	Rotary switch X6	Rotary switch X4	Panel Type Dip-switch S2 0=OFF, 1=ON Switch 1 2 3 4
BS-420	1	0	1	0 0 0 0
BS-420	2	0	2	0 0 0 0
BS-430	65	0	1	0 1 0 0
BU-BV-420	97	0	1	1 1 0 0

7. Verifying the System Before Startup

Before verifying the system, all parts in all system units must be installed and properly connected, and all panels and AutroFieldBus units must be addressed correctly.
Installation, cabling and connections

- Verify all internal cabling in all system units (all panels)
- Verify that all IO modules in the Fire Alarm Control Panel and Controller are installed in the cabinet
- Verify all external connections in the Fire Alarm Control Panel and Controller (to detector loops, other input / output connections)
- Addressing
- Verify that all AutroFieldBus units (Power Boards BSF-400) are addressed correctly
- Verify that all panels are assigned correct Panel IDs
- Verfiy that all panels are assigned System IDs
- Check power for correct mains voltage

8. Startup Procedure

When the AutroFieldBus units (Power Boards BSF-400 and all panels) have been addressed, and the configuration files have been generated by means of the AutroSafe Configuration Tool, power is to be applied to the system.

The commissioning can take place from any Fire Alarm Control Panel BS-420 or Operator Panel BS-430 in the system (freely selected panel).

During uploading of configuration files (or system software), the system may report possible faults. If such fault messages occur, the panel in question should be rebooted (Service Menu/Upgrade/Reboot). For detailed information on possible errors, refer to chapter 12, Fault Messages during Uploading.

8.1 Applying Power to the System

Always connect the cables to the batteries first, then power up the system by connecting the mains cable to a mains socket (230V/115V AC) or by switching the power ON from an external main fuse box. When power is applied to the system the very first time, an initialization of the system will automatically take place.

- Apply power to the system.

The display will show the following information (example):

```
Autrosafe software version 4.3.1
Config model 4.4
Market version: Land
Switch address 01-001
Searching for panels, found 2 of x
```

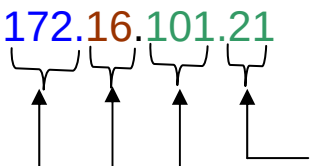
```
BS-420 01.01: 4.3.1
BU-420 01.01: 4.3.1
```

```
IP not set, select addressing mode:
1. Automatic         2. Manual
```

Note that, to prepare the system for later reconfigurations or software upgrades, a hardware reset must be performed. Refer to Upgrading the System, chapter 10.

8.2 IP Number Structure

Example:
172.16.101.21
172.17.101.117



Panel ID (+20), unique ID assigned to each panel

System ID (+100), identifies which system and unique configuration the panel belongs to.

Ethernet Port ID, referring to one of the two redundant network ports (each panel assigned to two consecutive numbers)

Network Number, common number for all panels belonging to the same network

8.3 Assigning IP Adresses

When the initialization is completed, the display will show the following:

```
Autrosafe software version 4.3.1
Config model 4.4
Market version: Land
Switch address 01-001
Searching for panels, found 2
```

```
BS-420 01.01: 4.3.1
BU-420 01.01: 4.3.1
```

```
IP not set, select addressing mode:
1. Automatic          2. Manual
```

If Automatic Mode is selected, default IP Adresses will be assigned to each panel. The number series which is used depends on the switch settings for the panel's System ID.

Note:
Use automatic addressing mode if you are not absolutely sure how to set IP addresses.

8.3.1 Automatic Addressing Mode

Selecting Automatic Addressing Mode will assign default IP Addresses to all panels.

```
Autrosafe software version 4.3.1
Config model 4.4
Market version: Land
Switch address 01-001
Searching for panels, found 2
```

```
BS-420 01.01: 4.3.1
BU-420 01.01: 4.3.1
```

```
IP not set, select addressing mode:
1. Automatic         2. Manual
```

- Press 1 to select Automatic Addressing.

```
Autrosafe software version 4.3.1
Config model 4.4
Market version: Land
Switch address 01-001
NETWORK ADDRESS: 172.16/172.17
```

```
BS-420 01.01: 101.21
BU-420 01.01: 101.117
```

```
Do you want to save or set manually?
1. Save    2. Set Address Manually
```

When the automatic addressing is completed, you can either save the automatic addressing (proceed to next step), or set addresses manually (refer to chapter 8.3.2, Manual Addressing Mode).

- To save the addressing, press 1.

```
Autrosafe software version 4.3.1
Config model 4.4
Market version: Land
Switch address 01-001
Searching for panels, found 2

BS-420 01.01: 4.3.1
BU-420 01.01: 4.3.1




Config missing
Verify config on switch settings
3. Upgrade software     4. Upgrade config
                        6. Reboot panels
```

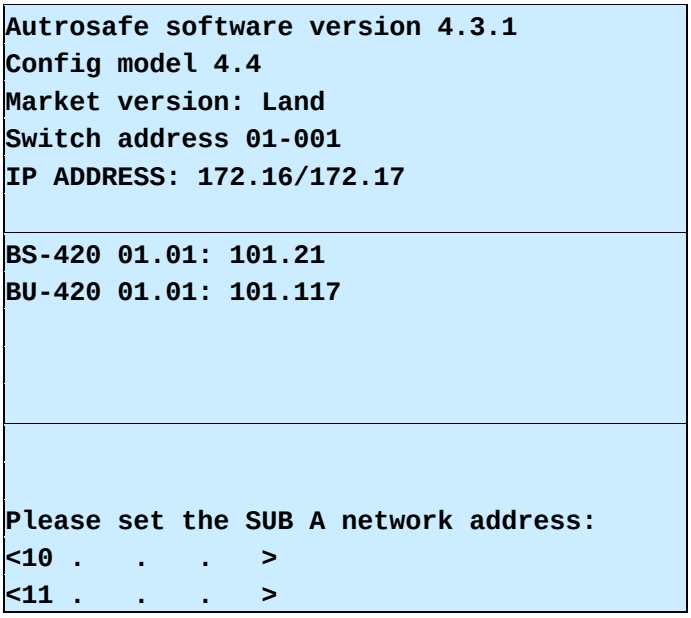
When the IP addressing is completed, proceed to chapter 8.5, Uploading Configuration Files.

8.3.2 Manual Addressing Mode

If you have to take into consideration IP Addresses that are already assigned to other existing components on the network, IP Addresses can be set manually. In this way, you can freely select IP Addresses within the given ranges of 3 different number series, each representing a specific class (Class A, B or C).

Note that the standard IP version 4 addressing is applied. This means that once a specific class is selected (A, B or C), only numbers within the range of this class can be selected.

Class A: number series 1-127
Class B: number series 128-191
Class C: number series 192-223



- Set the network addresses
- If necessary, press 1 to change host address
- Press 2 to save the manual addressing

When the manual IP addressing is completed, proceed to chapter 8.5, Uploading Configuration Files.

8.3.3 Configuration Missing

If no configuration has been uploaded to the system previously, the message “Config Missing” will be shown.

```
Autrosafe software version 4.3.1
Config model 4.4
Market version: Land
Switch address 01-001
Searching for panels, found 2
```

```
BS-420 01.01: 4.3.1
BU-420 01.01: 4.3.1
```

```
Config missing
1. Import config from USB stick
2. Reboot all panels
```

8.4 Configuration File

8.4.1 Name, Format and Extension

The AutroSafe Configuration Tool generates the following compressed file:

AC_Vnn_mm_filename.tar.bz2

- AC
  AutroSafeConfiguration
- Vnn
  Main interface model number
- mm
  Sub interface model number
- filename
  The AutroSafe configuration file name, valid characters are [0-9a-zA-Z] and underscore '_'. If the filename contains non-valid characters the file name will be replaced with the name "Configuration".

The zip file cannot contain more than 127 characters, if so the filename will be truncated.

8.4.2 Copying the Zip File to a USB Stick

Make sure to copy and paste the files in the root directory of the USB stick. Also make sure to remove all other files from the memory stick.

- When the configuration zip file is generated by means of the AutroSafe Configuration Tool, copy the file to a USB memory stick.

8.5 Uploading Configuration Files to the System

When the IP addressing is completed, configuration files can be uploaded to the system from one central point (any panel in the system).

```
Autrosafe software version 4.3.1
Config model 4.4
Market version: Land
Switch address 01-001
Searching for panels, found 2
```

```
BS-420 01.01: 4.3.1
BU-420 01.01: 4.3.1
```

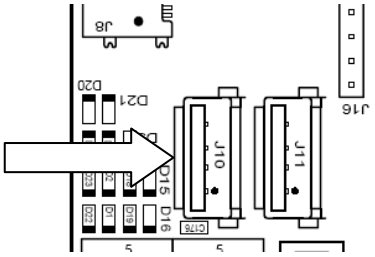
```
Config missing
Verify config on switch settings
3. Upgrade software     4. Upgrade config
                        6. Reboot panels
```

- Press 4 (Upgrade config).

```
Autrosafe software version 4.3.1
Config model 4.4
Market version: Land
Switch address 01-001
Searching for panels, found 2
```

```
BS-420 01.01: 4.3.1
BU-420 01.01: 4.3.1
```

```
Insert USB stick in USB port
```



- Insert the USB memory stick into one of the USB host ports on the BSA-400 Controller Board.

The following will appear on the display:

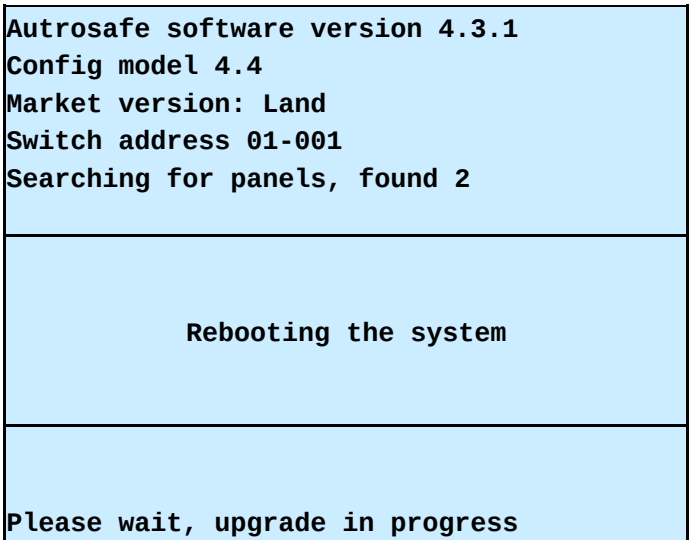
```
Autrosafe software version 4.3.1
Config model 4.4
Market version: Land
Switch address 01-001
Searching for panels, found 2

      Transfering to panels (1 of 2)

```

```
Autrosafe software version 4.3.1
Config model 4.4
Market version: Land
Switch address 01-001
Searching for panels, found 2

       Unpacking to panel (1 of 2)


Please wait, upgrade in progress
```

```
Autrosafe software version 4.3.1
Config model 4.4
Market version: Land
Switch address 01-001
Searching for panels, found 2

  Upgrading config…

  Finished

3. Upgrade software     4. Upgrade config
                        6. Reboot panels
```

- Remove the USB stick when the uploading is completed, then press 6 to reboot the system.

Selection 3. “Upgrade Software” is shown only if the software is not already upgraded.



When the system is rebooted, the system will enter normal operation mode.

- To run initialization, press 1 or wait (countdown).

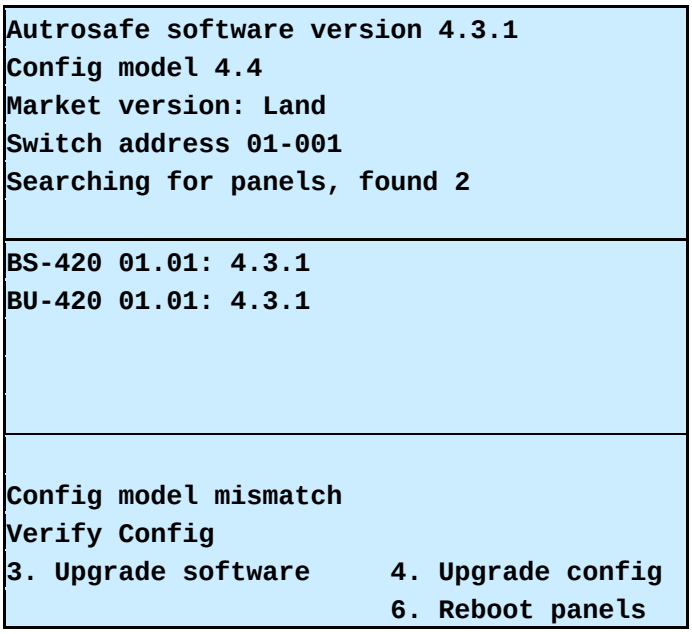
8.6 Configuration Mismatch

If the system has an existing configuration, and the new configuration you have uploaded does not match the installation in question, the message “Config Mismatch” will appear.

If the software to be used is not supported by the config model, the message “Config Model Mismatch” will appear (see screenshot below).

The “Config Faulty” message will appear if the configuration files for some reason are corrupt.

The “Config Market Mismatch” message will appear if the panel does not match the market that has been selected in the configuration.



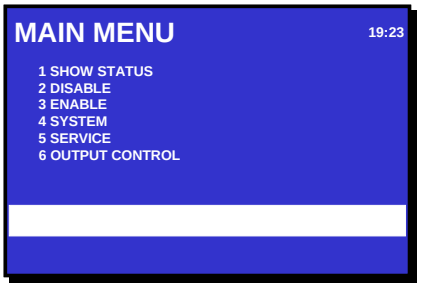
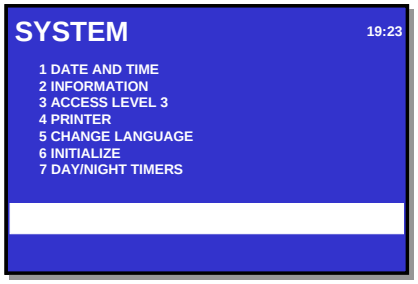
8.7 Entering Required Access Levels

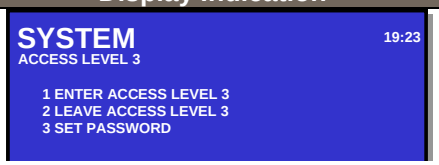
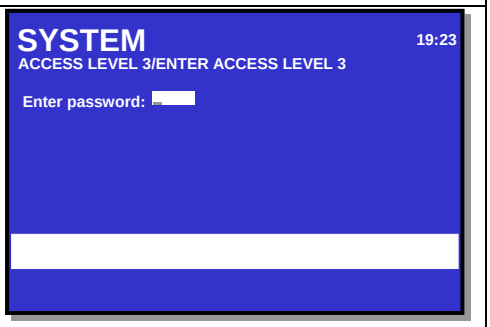
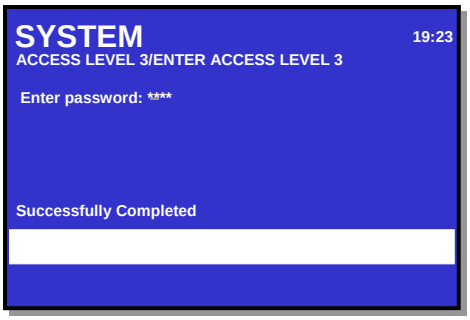
All user interface controls are classified as belonging to one of the different access levels described below:

Access Level	Access Remedy	Description
1	No key or password required.	Accessible by members of the general public. All mandatory indications are visible at access level 1 without prior manual intervention.
2	Access by key.	Accessible by persons having a specified responsibility for safety.
3	Password restricted.	Accessible by persons trained and authorized to do reconfiguration of site specific data and maintenance according to the manufacturer's published instruction.

To be able to *verify the system after an upgrade*, *Access Level 2* must be entered. Access Level 2 is accessed by the key (turn the key counter-clockwise).

Access level 3 is entered as described in the procedure below.

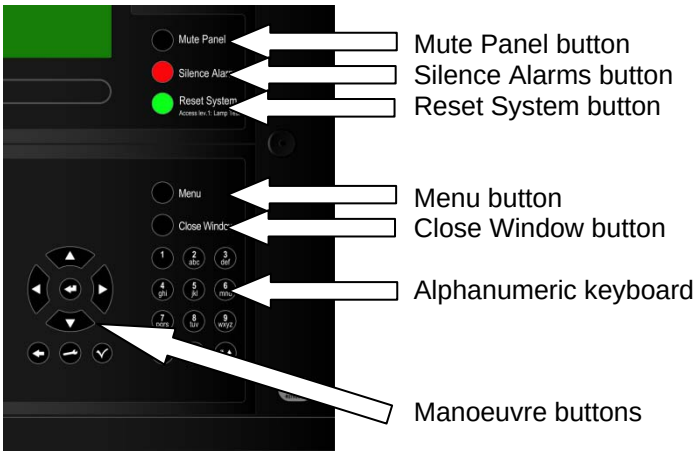
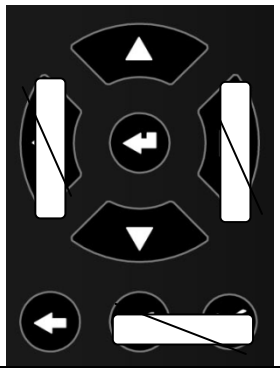
Step	Actions to be taken	Display Indication
1	To enter the *Main Menu* from normal Operation Mode, press	
2	To select SYSTEM, press 4.	

Step	Actions to be taken	Display Indication
3	To select ACCESS LEVEL 3, press 3.	
4	To enter ACCESS LEVEL 3, press 1.	
5	Enter the password, then press twice.	

9. Verifying the System after an Upload

9.1 General System Verification Procedure

To ensure that the system works properly during normal operation after an upload, the whole system (control panel, detectors, control functions) should be verified after an upload.

Step	Description	√
1	To test the panel indicator lights and internal buzzer, press and hold the Reset button for at least 5 seconds. All indicators are lit and the buzzer is turned on. The test will automatically stop. The lamp test can be performed in access level 1 (no use of key).	
2	Test all operating keys by pressing each key (refer also to Operator's Handbook): All buttons will give a short "Beep" when pressed except Mute button, Menu button and Reset System button (plus the ones that are not supported, see below).  Note that the left/right arrow buttons and the two buttons in the lowermost right hand corner (indicated with a white line) are not yet supported: 	
3	Perform a visual and functional inspection of manual call-points and automatic detectors.	
4	Disable any alarm transference to the Fire Alarm Routing Equipment -FARE output.	
5	Activate the alarm system. Test all sounders by activating an alarm from a corresponding manual call-point.	
6	Test all control functions.	
7	Activate alarms from at least one detector/manual call-point in each zone and a check that	

Step	Description	√
	all respective outputs are activated.	
8	Test the action of any auxiliary operating functions (disabling, cancelling and resetting buttons).	
9	Check the alarm transference outputs by connecting from outgoing outputs (potential free relay and 24V output) activated by alarm in a zone.	
10	Check the fault warning function from detector zones by removing a detector in each zone. Activate a fault (remove battery fuse) and observe: - the *Fault* indicator starts to blink - a fault warning is displayed - the internal buzzer is turned ON - the Fault Warning Routing Equipment (FWRE) output is activated (if any)	
11	Verify all *conditions*, i.e.: - Fire Alarm condition - Fire Warning condition - Fault Warning condition - Disablement condition - Test condition	
12	On completion of checks, ensure that only the green "Power" indicator is ON when the panel is in its idle state (normal operation).	
13	Enable alarm transference to the Fire Alarm Routing Equipment -FARE output.	

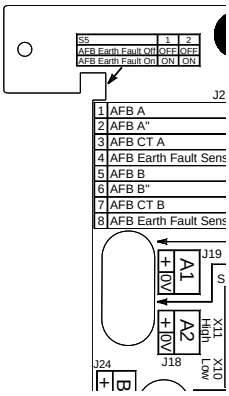
9.2 Verifying Detection Loops During Normal Operation

It may be necessary to verify the detection loops (checking the loop topology, the types of loop units, the location of loop units, the Loop Sequence Indexes, etc.) during normal operation using the *AS-2000 Loop Diagnostic Tool*.
Before applying the tool, prepare the system for the verification as follows:

- Enter the Service Menu (5), select Upgrade (5), then Reboot System (6).

The system will now enter system fault condition.

Power Board BSF-400



Fuse A1 and A2

- Remove fuse A1 and A2 from the Power Board BSF-400.
- Connect and apply the tool, and do the necessary verifications.

Alternative 1:

- Disconnect a detection loop. Use the AS-2000 Was-box to verify the loop. Perform a verification for each loop in turn.

Alternative 2:

- Disconnect the ribbon cable to BSL-310. Connect the AS-2000. Run an initialization.

- When the verification is completed, disconnect the tool/PC, re-connect the cables, then re-place the fuses.
- Reboot the system again.

10. Upgrading the System

10.1 Introduction

NOTE:
When upgrading the system by means of a USB memory stick, do not remove the USB stick from the USB port until you are sure that the upgrade procedure is completed.

Enter the menu "View Upgrade Status" to follow the progress and verify that the procedure is completed.

After the very first startup of a system, a running system can be upgraded at any time using the service menu commands (shown in the next chapter). The upgrading can be performed from any Fire Alarm Control Panel BS-420 or Operator Panel BS-430 in the system (a freely selected panel).

Note that once you have selected a "master" panel for upgrading, the system will temporarily block all other panels during the upgrade procedure, preventing the system from being upgraded from other panels.

This chapter deals with upgrading by means of a USB memory stick. Upgrading can also be performed by using a computer remotely connected to a web site (refer to separate handbook).

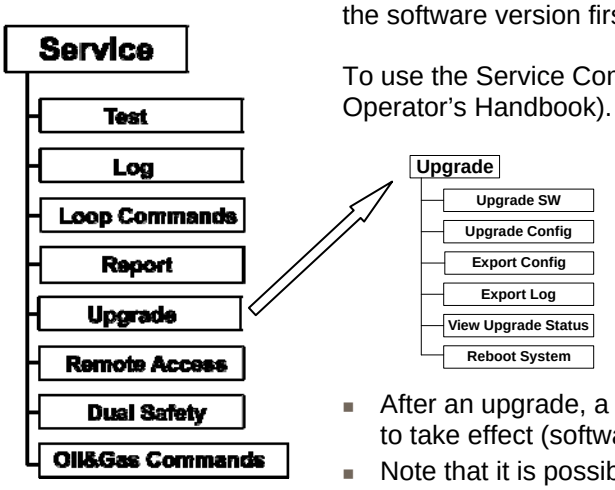
10.2 Upgrading During Normal Operation (SW/Config)

10.2.1 Introduction

The Service Menu includes submenus which allows you to upgrade both the system software and the configuration (or either of them) *during normal operation* (see following chapters).

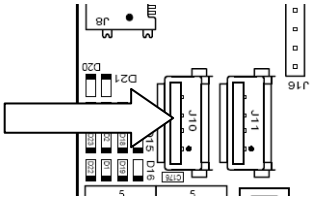
Note that if both the software and the configuration are to be upgraded, the system software and configuration have to be supported by the same config model. As a general rule, if both the software and the configuration are to be upgraded, always upgrade the software version first, then the configuration.

To use the Service Commands, access level 3 is required (refer to Operator's Handbook).



- After an upgrade, a reboot must always be executed for changes to take effect (software and/or configuration ugrade).
- Note that it is possible to upgrade both software and the configuration in turn before rebooting, i.e. it is not necessary to reboot after each single upgrade.

10.2.2 Upgrading Software During Normal Operation

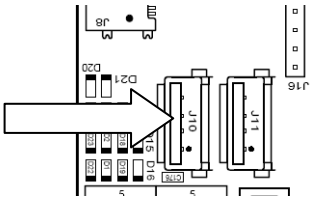


- Note that before executing this command, insert the USB memory stick with the correct and valid file into one of the USB ports on the BSA-400 Controller Board.

- After the stick is inserted, wait at least 5 seconds before executing the command.
- From the panel front, press 5 to enter the Service Menu (Access Level 3).
- To select Upgrade, press 5.
- To Upgrade SW press 1.
- To view the upgrade status, the View Upgrade Status command can be used.
- If you do not intend to upgrade the configuration at this point, the panel has to be rebooted for changes to take effect.
- If you also intend to upgrade the configuration, do not reboot at this point, but go to Upgrade Config (see next chapter).
- When the upgrade is completed, press 6 to run the Reboot System command.

NOTE:
Do not remove the USB stick from the USB port until you are sure that the upgrade procedure is completed.

10.2.3 Upgrading Configuration During Normal Operation



- Note that before executing this command, insert the USB memory stick with the correct and valid file into one of the USB ports on the BSA-400 Controller Board.

- After the stick is inserted, wait at least 5 seconds before executing the command.
- From the panel front, press 5 to enter the Service Menu (Access Level 3).
- To select Upgrade, press 5.
- To Upgrade Config press 2.
- To view the upgrade status, the View Upgrade Status command can be used.
- If you do not intend to upgrade the software at this point (if not already done), the panel has to be rebooted for changes to take effect.
- If you also intend to upgrade the software (supported by the same config model), do not reboot at this point, but go to Upgrade Software (see previous chapter).
- When the upgrade is completed, press 6 to run the Reboot System command,.

NOTE:
Do not remove the USB stick from the USB port until you are sure that the upgrade procedure is completed.

10.3 Upgrading when Panels are Added/Removed

If panels are added or removed, or it is necessary to change IP addresses, a reboot must be executed. The continuing procedure is similar to the startup procedure, chapter 8.

- Go to chapter 8 and follow the procedure.

10.4 Upgrading if IP Addresses are to be Changed

If it is necessary to change IP addresses, a reboot must be executed. The continuing procedure is described in the startup procedure, chapter 8.

- Go to chapter 8 and follow the procedure.

10.5 Upgrading a Single Panel

If a single panel in a network system for some reason has a wrong software and/or configuration version, the process of upgrading the entire system could be both unnecessarily time-consuming, or even impossible if the software versions are incompatible. To simplify the version correction in such a case, the system features an upgrade procedure of a single panel. Before the upgrade procedure is carried out, the file name of the software and/or configuration file has to be changed.

- Locate the software/configuration file(s) in question on your computer.
- Change the name of the software file:
  Add the text _**Recovery** to the name of the software file as follows:
  Example:
  The file name AS_V4_3_0_0_C4_34.tar.bz2 is changed to AS_V4_3_0_0_C4_34_**Recovery**.tar.bz2
- Change the name of the configuration file:
  Remove the text representing the “file name” (in this example, Tiller) and replace it with the text **Recovery**:
  Example;
  AC_4_34_Tiller.tar.bz2 is changed to AC_4_34_**Recovery**.tar.bz2

- Copy the file(s) onto your USB memory stick.
- Insert the USB memory stick into one of the USB ports on the BSA-400 Controller Board, then reboot the panel.

The panel will automatically be upgraded.

- If the panel has a display, the process similar to the startup procedure will be shown (chapter 8).
- If the panel does not have a display, the process will be indicated by means of the yellow LED indicator D2 on the BSA-400 board as follows (see illustration, chapter 10.7.3):
  - Slow blink: upgrade in progress
  - Fast blink: upgrade failed
  - Steady yellow light: Upgrade completed, remove stick to reboot the panel

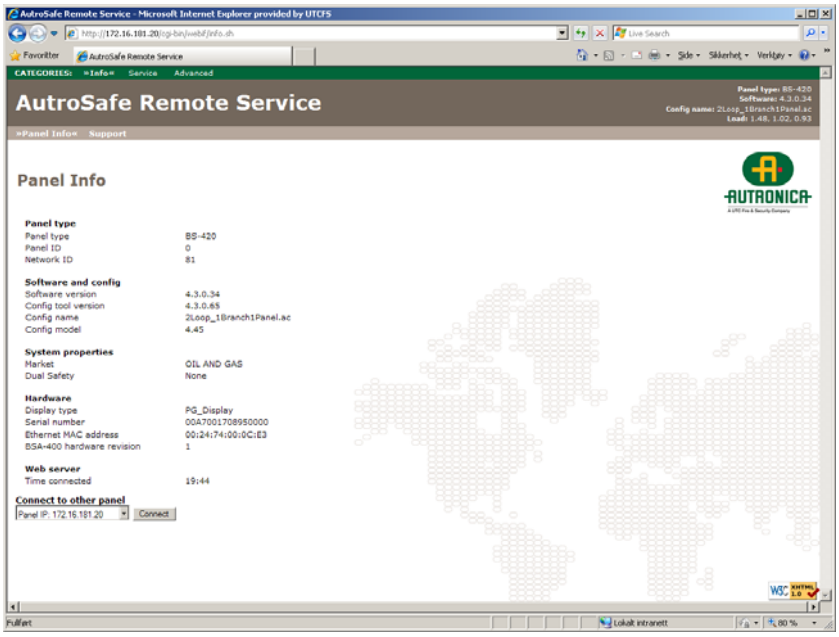
NOTE:
Do not remove the USB stick from the USB port until you are sure that the upgrade procedure is completed.

10.6 Upgrading by Remote Access to a Web site

Upgrading can be performed by means of a computer with remote access to a web site providing several service functions.

- From the Service menu, press 6 to select Remote Access.

For further information, refer to separate handbook.



10.7 Upgrading Software Version 4.0.1 to 4.1.1

10.7.1 General

This chapter deals with the upgrade from software version 4.0.1 to 4.1.1.

IMPORTANT:

- Follow the upgrade procedure as described in detail below. During the upgrade to software version 4.1.1, the system will enter system fault condition.
- Do NOT disconnect the mains power or press the front panel's Reset System button.
- Press the front panel's Mute button to silence the buzzer.
- Note that a panel that has been upgraded to software version 4.1.1 cannot be downgraded to software version 4.0.1.

Before reconfiguring the system or upgrading the system software, a hardware reset must be executed. All panels belonging to the same system will be reset and upgrading can then take place.

If the system is in normal operation, go to chapter 10.7.2.
If the system is in system fault condition, go to chapter 10.7.3.

10.7.2 Preparing a System in Normal Operation

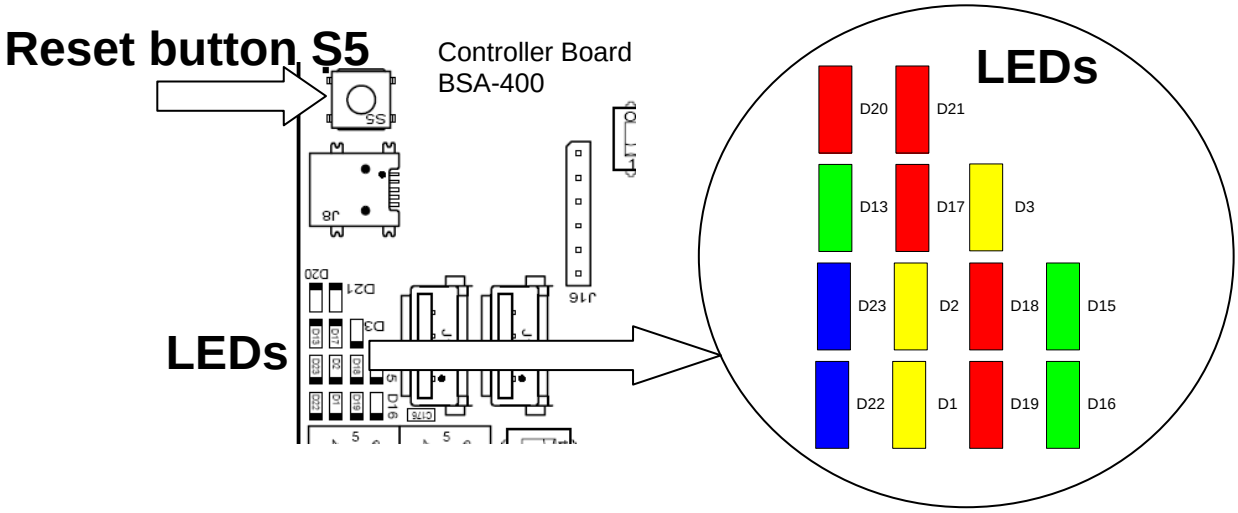
- Push the reset button S5 less than 1 second to shut down the panel in a controlled manner.
- Wait until the blue LED indicator D22 (see illustration on next page) goes off.

The panel has now entered system fault condition.

- Go to chapter 10.7.3.

10.7.3 Preparing a System in System Fault Condition

- To perform a hard reset, push and hold down the reset button S5 until the red LED indicator D20 and D21 are lit for a short moment and you hear a click from the relay.



- The system will now detect all running panels, and prompt you to reboot the entire system (all running panels).

- Verify that all panels in the system are detected.
- Press 2 to select Reboot running panels.

When all panels are rebooted, four selections will appear.

- Press 3 (“Upgrade Software”).
- Insert the USB memory stick with the valid file into one of the USB host ports on the BSA-400 Controller Board.

- The display will indicate when the uploading is completed.
- Remove the USB stick.

The system will automatically reboot.

After a short while, the panel will indicate system fault condition.

- Do NOT disconnect the mains power or press the front panel’s Reset System button.
- Press the front panel’s Mute button to silence the buzzer.

When the system is rebooted, the system will be upgraded (the new system software version) and the system will enter normal operation mode.

- Proceed with the upgrading procedure.

10.8 Upgrading Software Version 4.0.1 or 4.1.1 to 4.3.1

This chapter shows examples of how to upgrade from software version 4.0.1 or 4.1.1 to 4.3.1.

10.8.1 Example 1: Upgrading all Panels from SW Version 4.0.1 or 4.1.1 to 4.3.1

All panels have software version 4.0.1 or 4.1.1 installed.

- Upgrade all panels simultaneously by using a USB stick including program version 4.3.1 (or later when available).

10.8.2 Example 2: Adding a BS-420/BS-430 panel with SW Version 4.1.1 to a System Running on SW Version 4.3.1

A system is running on software version 4.3.1. A new BS-420/BS-430 panel with software version 4.1.1 installed is going to be added.

- Start the new panel without connecting it to the AutroNet.
- Install version 4.3.1 by using an USB stick.
- Connect the new panel to the system AutroNet.
- Restart the system and upgrade the new system configuration data by using an USB stick.

10.8.3 Example 3: Adding a BC-420 Controller with SW Version 4.1.1 to a System Running on SW Version 4.3.1

A system is running with software version 4.3.1. A new BC-420 Controller with software version 4.1.1 installed is going to be added.

- Disconnect a BS-420 panel from the system AutroNet.
- Restart and downgrade the BS-420 panel to run version 4.1.1 by using a USB stick.
- Temporarily, connect the downgraded panel and the new BC-420 Controller together by using an AutroNet connection.
- Start the two system units and upgrade them to run version 4.3.1 by using an USB stick.
- Connect the two system units to the original system AutroNet.
- Restart the system and upgrade the new system configuration data by using an USB stick.

10.8.4 Example 4: Adding a Panel with SW Version 4.3.1 to a System Running on SW Version 4.1.1

A system is running on software version 4.1.1. A new panel with software version 4.3.1 installed is going to be added.

- Start the system without connecting the new panel to the AutroNet.
- Upgrade the system to run version 4.3.1 by using a USB stick.
- Connect the new panel to the system AutroNet.
- Restart the system and upgrade the new system configuration data by using an USB stick.

11. Startup Procedure for a Dual Safety System

11.1 Introduction

This chapter describes the initial startup procedure of a system consisting of a Primary System and a Secondary System (AutroSafe Dual Safety concept).

In principle, the startup procedure is identical to the startup procedure of a normal system, however, the startup procedure must be carried out for each system in turn (both the Primary System and the Secondary System).

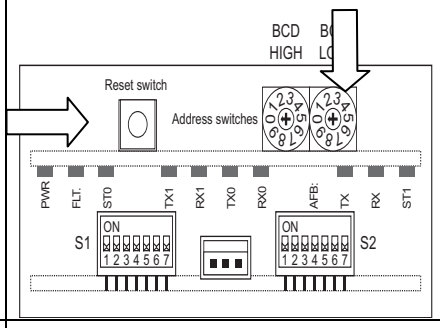
The startup of the Primary System can take place from any selected Fire Alarm Control Panel BS-420 or Operator Panel BS-430 belonging to the Primary System. Likewise, the startup of a Secondary System can take place from any panel belonging to the Secondary System.

There are two AutroKeepers BN-180 for each detection loop in a Dual Safety System. One must be assigned to the Primary System and the other to the Secondary System (dipswitch settings). Furthermore, the type of protocol for the AutroFieldBus Protocol Converter BSD-321 (if used) must be set to Al_Com+ (rotary switch setting).

In the following guidelines, a startup of the Secondary System is carried out first, then the Primary System. When the startup of both systems is completed, the Primary System will be in Active Mode (it controls the detecton loops), and the Secondary System will be in Standby Mode (ready to take over control of the detection loops).

11.2 Guidelines – Startup Procedure

The following guidelines apply:

Step	Action	Chapter
1	**Perform the following actions for both the Primary and the Secondary System:** ▪ Verify the detection loops by means of the AS-2000 tool. ▪ Perform a consistency check of the configuration data using the results from the AS-2000 verification and the data that has been configured by means of the AutroSafe Configuration Tool. ▪ Assign an AutroFieldBus address to each AutroFieldBus unit. ▪ Assign a Panel ID to each panel by means of switches (dip-switches and rotary switches on BSA-400). ▪ Assign a System ID to each panel by means of rotary switches (on BSA-400). ▪ Verify the system before startup (chapter 7).	3, 4, 5, 6 and 7.
2	**Define the type of protocol and assign an AutroFieldBus address on the AutroFieldBus Protocol Converter BSD-321** The BSD-321's default protocol by delivery is Al_Com+. If needed, the procedure for selecting the protocol type is described below. ▪ Set the actual AutroFieldBus address in the range of 1-31 according to the specific configuration. ▪ The type of protocol is defined by on-board rotary switches. To select protocol type: ▪ Apply power to the converter. ▪ Set the switches to 70 (Al_Com+), then press the reset button. The indicators will start flashing. ▪ When the indicators stop flashing after a short while. ▪ Set the actual AutroFieldBus address, then press reset. 	
3	**Set switches for Primary or Secondary on the AutroKeepers (BN-180)** ▪ Set dipswitch 1 in postion OFF for the BN-180 that belongs to the Primary System ▪ Set dipswitch 1 in postion ON for the BN-180 that belongs to the Secondary System ▪ Apply power to BN-180 (24V DV external power).	

Step	Action	Chapter
4	**Apply power to the panel belonging to the Secondary System, then:** ▪ Select Automatic addressing mode to assign an IP Address to each panel. ▪ Upload configuration data to all panels from the panel in question. ▪ Start system, perform an initialization.	8.1, 8.3, 8.5
5	**Apply power to the panel belonging to the Primary System, then:** ▪ Select Automatic addressing mode to assign an IP Address to each panel. ▪ Upload configuration data to all panels from the panel in question. ▪ Start system, perform an initialization.	8.1, 8.3, 8.5
6	**Verify the Dual Safety functionality:** The Primary System is now in Active Mode. The Secondary System is in Standby Mode (the indicator Dual Safety Stdby on this panel has a steady yellow light). Perform a manual transfer of control from the Primary System to the Secondary System. ▪ From the Primary System, enter the Service Menu, and select Dual Safety, then Transfer to Secondary ▪ As soon as the loop control is transferred to the Secondary System, the indicator Dual Safety Stdby will be lit on the Primary System's panel and will go off on the Secondary System's panel.	
7	**Transfer the control back to the Primary System** ▪ From the Primary System, enter the Service Menu, and select Dual Safety, then Transfer to Primary As soon as the loop control is transferred to the Primary System, the indicator Dual Safety Stdby will be lit on the Secondary System's panel.	
8	**Verify the entire system after an upload.**	9

Dual Safety Stdby

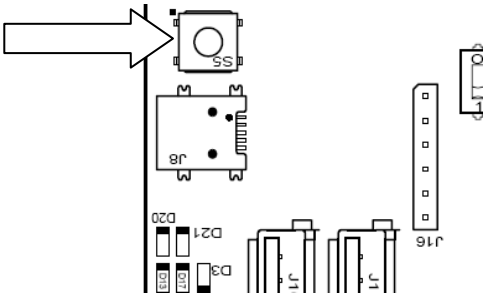
Applicable to systems using the Dual Safety concept; a system with redundant loop control consisting of a Primary and Secondary System.

- Steady yellow light:
  The panel is in *Standby Mode*, i.e. this panel does not control the detection loops. The panel(s) in the other system controls the detection loops and is in *Active Mode.*
- Blinking light: the panel does not control all detection loops/loop units, and/or loop control is being transferred. Actions must be taken.

12. Fault Messages during Uploading

12.1 Introduction

During uploading, the system may report possible faults. If such fault messages occur, the panel in question should be rebooted by means of the reset button S5 on the Controller Board BSA-400 inside the panel.



- To perform a hard reset, push and hold down the reset button S5 (approximately 6 to10 seconds) until the red LED indicators D20 and D21 are lit for a short moment and you hear a click from the relay.

12.2 Invalid File on USB Stick

Invalid file is found on the USB stick
Example:
Software: "Software Upgrade, File with syntax AS_V*_*_*_*_C*_*.tar.bz2 not found in root folder"
Config: "Config Upgrade, File with syntax AC_V4_5_*.tar.bz2 not found in root folder"

12.3 Data Transmission Timeout

The transmission of data to a panel takes too long (timer) due to a possible network failure:
"Transfer to panel <NN> timed out"

12.4 Corrupt File

File found, but it is corrupt (crc).
Example:
"Corrupt file AS_V4_0_0_1_C4_5.tar.bz2"

12.5 Fail to Unpack Files

If the unpacking of files on a panel is not successful, one of the following error messages may occur:
"Failed to unpack, file system error on panel <NN>"
"Failed to unpack, panel error on panel <NN>"

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Norway

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Autronica Fire and Security AS

Headquarters, Trondheim, Norway. Phone: + 47 73 58 25 00, fax: + 47 73 58 25 01.
Head Office Oil & Gas, Stavanger, Norway**.** Phone: + 47 51 84 09 00, fax: + 47 51 84 09 99.
Division Oil & Gas, Oslo, Norway. Phone: + 47 23 17 50 50, Fax: + 47 23 17 50 51
Division Oil & Gas, PO Box 416, Farnborough GU14 4AT, UK. Phone: + 47 51 84 09 00, Fax: + 44 84 52 80 20 55
Division Maritime, Suppression/New Build Detection & Alarm. Norway. Phone: + 47 31 29 55 00, Fax: + 47 31 29 55 01
Division Maritime, After Sales/Service Detection & Alarm, Norway. Phone: +47-73 58 25 00, Fax: +47-73 58 25 01

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